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Regulations Nos. 85 (Measurement of the net power), 115 (LPG and CNG retrofit systems), 133 (Recyclability of motor vehicles) and 143 (Heavy Duty Dual-Fuel Engine Retrofit Systems (HDDF-ERS))

Proposal for a new Supplement to the original version of Regulation No. 85 (Measurement of the net power)

Submitted by the expert from the International Organization of Motor Vehicle Manufacturers*

The text reproduced below was prepared by the expert from the International Organization of Motor Vehicle Manufacturers (OICA). Following the last session of the Working Party on Pollution and Energy (GRPE) (see report ECE/TRANS/WP.29/GRPE/75, para. 30), this document proposes a solution for the concern raised by the expert from the United Kingdom of Great Britain and Northern Ireland (UK) in GRPE-75-13 and corrects a long standing error in a formula shown by OICA in GRPE-75-12. The modifications to the current text of the Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2014–2018 (ECE/TRANS/240, para. 105 and ECE/TRANS/2014/26, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

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I. Proposal

Paragraph 5.3.1.3., amend to read:

"5.3.1.3. Just before beginning the test, the motor shall be run on the bench for three minutes delivering a power equal to **or higher than** 80 per cent of the maximum ~~power~~ **30 minutes power** at the speed recommended by the manufacturer."

Annex 5, paragraph 5.4.2., amend to read:

"5.4.2. Diesel engines - Factor α_d

The power correction factor (α_d) for diesel engines at constant fuel rate is obtained by applying the formula:

Where $\alpha_d = (f_a)^{f_m}$

f_a is the atmospheric factor

f_m is the characteristic parameter for each type of engine and adjustment"

II. Justification

1. Both "80% maximum power" and "80% maximum 30 minutes power" are technically correct methods. The most suitable method depends on the motor cooling technology (air cooled or water/oil cooled motors).

2. UK raised a concern for air-cooled motors, where a 3 minute warm-up at 80 per cent maximum power can result in the declared net power figures being much lower than the actual power of the motor (due to activation of thermal protection of the motor), while in real world use, operating above 80 per cent maximum net power is only expected for a very short time, most driving is expected to be in the 30 minutes power range.

3. Considering the arguments above, and also in order to maintain consistency with previous test results whenever possible, we propose that manufacturers can make both choices (30 minutes power or maximum power) depending on their technology.

4. At some time in the evolution of the text, the parameter f_m changed from being a superscript to being normal text (i.e. the formula changed from reading "f_a to the power of f_m" to reading "f_a multiplied by f_m"). This is incorrect and should be corrected.